Michigan Technical Note

USDA-Natural Resources Conservation Service

Topic: Grazing Technical Note # 7
Subject: Grazing Management for Biological Control of Brush and Herbaceous Weeds
Date: October, 2010

Biological control is the use of animals, insects, plants or pathogens to control brush. Grazing animals can be used to either promote or reduce brush and weed abundance. Goats and sheep are two examples of livestock that will eat brush. Sheep and more often, goats are known to forage on multiflora rose and autumn olive. The key to control is repeated heavy defoliation in spring and early summer without overgrazing the grasses and legumes.

Research suggests that the grazing of sheep or goats for two seasons at a rate of eight to twelve goats/sheep per acre may be required in the early season. This stocking rate may be reduced later when pasture growth slows. A rotation system works best. Multi-species grazing (Table 1.) can be effective at clearing and subsequent killing of brush in pastures.

Goats will defoliate and debark bushes, saplings, and small trees. By standing on their hind legs, they can defoliate stems to a height of 5 feet. Spring and early summer are critical times for goat and sheep control of brush.

Depending on the objective, grazing animals may be used to reduce or sustain brush in the pasture.

Table 1. Stocking rate guide for brush control.

Pasture Type	Brush Canopy	Cows	Goat or Sheep Alone	Cows + Goat/Sheep
Brushy Pasture	10-40%	1	9-11	1+(2 to4)
Brush Eradication	>40%		8-12	0.5+ (6 to 8 per acre)
Sustainable Browse Management	10-40%		1 to 3 per acre	0.25 + (1 to 2 per acre)

On brushy pasture, 9-11 goats could run on the same amount of land required to run a single head of cattle. The number of goats to add to an existing cattle stocking rate on brushy pasture would be 2 to 4 per existing cow. Data from NRCS Missouri.

Brush reduction
For brush reduction, identify the priority paddock or area. Use high density grazing beginning when the leaf of the target brush is one half to two thirds full size in the spring. Percent defoliation to achieve depends on the species of brush. Up to 95% defoliation is needed to suppress knapweed. Follow the grazing schedule for rotation in the grazing plan. Pull animals out of rotation and put them back into the priority area to achieve desired defoliation. Repeat this process. It may take years to see a change. Once the reduction has been achieved, designate a new priority paddock.

Alternatively, a 30 day in and 30 day out switchback method may be used to defoliate target species at least 65% and up to 95%. Multiple years of grazing animal control will be needed to obtain desired control. Alternate the starting paddock or area each year.

Sustaining brush levels
To maintain a desired level of brush for browsing livestock, utilize the multi-paddock rotation but lower the defoliation to 25% of the current growth. Set the rest period so that the woody plants are not defoliated more than twice per growing season.

The 30 day switchback method stocked to obtain 20% defoliation in 30 days can also be utilized.

Sheep and/or goats may be introduced only once per growing season for no longer than 30 days with a target defoliation of 50%.

Herbaceous weed reduction
Weeds should be grazed when they are most susceptible and relatively palatable. In general, weeds are most susceptible to grazing when they are actively growing and just beginning flower production. When weeds begin elevating their flowering stalks the growth phase in known as “bolting.” Grazing weeds when at bolting may be most detrimental to them and the best time for their control. Always check with your local MSU Extension agriculture educator for information regarding weeds that may be toxic to the livestock species you are managing.

The most common grazing strategies to reduce weed infestations involve concentrating animals in relatively small areas for a few days and then moving them onto another area when defoliation objectives are met. In many cases, grazing prescriptions will involve returning to an area that was grazed earlier in the season to graze the regrowth of the target plant.

Prescribed grazing will be needed for several years to affect weed populations. Suppression of weeds by grazing can be achieved in the first one to five years of

grazing management. Eradication of weed species through grazing management alone is not realistic. Supplementation with quality hay may be needed to maintain the desired body condition of the livestock targeting the weed species.

Consult your local MSU Extension agriculture educator for specific weed characteristics to time grazing. Chapter 15 Grazing and Browsing Guidelines for Controlling Rangeland Weeds in Targeted Grazing: a natural approach to vegetation management and landscape enhancement available at http://www.cnr.uidaho.edu/rx-grazing/Handbook.htm provides weed species specific grazing prescriptions.

Grazing management may be combined with chemical control measures such as herbicides. Herbicides vary in effectiveness and may have restrictions on use of the treated acres for forage or hay. Always read and follow the label directions of the herbicide you select.

Many weeds become infestations because they are not palatable to livestock. Some plants have a bitter taste or offensive smell. There has been successful training of livestock to eat weeds they would normally avoid however the training process is complex and may span multiple generations of stock. A combination of mechanical and chemical treatments along with grazing management should be used in areas infested by unpalatable weeds.

Grazing should be closely monitored and the animals promptly removed when defoliation of the target species has been achieved and/or before desirable species are impacted.

References:

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